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Main Menu | Search Form | Posting Counts | Show S Numbers | Edit S Numbers

Search Results - Record(s) 1 through 1 of 1 returned.

1 Document ID: US 5866363 A
Entry 1 of 1 File: DWPI Feb 2, 1999

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TITLE: Population of recombinant vectors, oligonuclectides and random peptide sequences - useful for the identification and characterisation of peptide epitopes
INVENTOR: PIETZENIK, G

PRIORITY-DATA:

1991US-0662764	February 28, 1991
1985US-0770390	August 28, 1985
1988US-0201358	May 26, 1988

PATENT-FAMILY:

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INT-CL (IPC): A61 K 38/04; C12 N 15/11; C12 N 15/63; C12 P 21/02

ABSTRACTED-PUB-NO: US 5866363A
BASIC-ABSTRACT:

The following are claimed: (i) a population of recombinant vectors (RVs) comprising: autonomously replicating nucleic acid sequences which contain recombinant structural genes (RSG) (I), each of the RSGs (I) includes an insert containing one member of the oligonucleotide population (OP); (ii) the oligonucleotide population (OP) which comprises oligonucleotides with a coding region of 4 to 12 nucleotide triplets; (iii) a set of corresponding random peptides, coded for by the OP, with sequences of 4 to 12 L-amino acid residues (where the RSGs are expressed upon transfer of the recombinant vectors into E. coli host cells, in which expression of the RSGs yields polypeptides, each expressed polypeptide comprises one of the set of corresponding random peptide sequences); (iv) a population of oligonucleotides that comprises double-stranded oligonucleotides containing coding regions of 4 to 12 nucleotide triplets, the coding regions encode a set of peptide sequences of 4 to 12 L-amino acid residues, the oligonucleotides also comprise 5' and 3' flanking sequences that permit the oligonucleotides to be ligated into a vector, where the sum of the peptide sequences represents at least 10% of all possible peptide sequences of that length; (v) a method of producing a population of epitopic peptide sequences that comprises: (a) providing a population of recombinant E. coli cells, each of which contains at least one member of a recombinant vector population, each member of the vector population includes substantially identical, autonomously replicating, nucleic acid sequences, the nucleic acid sequences comprise a recombinant structural gene (I), and where each member of the oligonucleotide population is contained in the recombinant vector population and where the sum of the

corresponding epitopic peptide sequences represents substantially all possible peptide sequences of that length; and (b) culturing the recombinant E. coli cells to allow expression of the recombinant structural genes such that the epitopic peptide sequences are accessible to antibody recognition; (vi) a population of recombinant vectors comprising: substantially identical autonomously replicating nucleic acid sequences comprising a recombinant structural gene (I), and where the sum of corresponding peptide sequences encoded by the oligonucleotide population represents at least 10% of all possible peptide sequences of that length, and where each member of the oligonucleotide population is contained in the recombinant vector population (II), and where the recombinant structural genes are expressed upon transfer of the recombinant vectors into E. coli host cells, and where expression of the recombinant structural genes yields polypeptides, each polypeptide comprising the corresponding peptide sequence; (vii) a method of producing a population of epitopic peptide sequences, comprising: (a) providing a population of recombinant E. coli cells, each of the cells containing at least one member of a recombinant vector population, each member of the vector population comprising substantially identical autonomously replicating nucleic acid sequences, the nucleic acid sequences comprising a recombinant structural gene (I), and where (II); and culturing the recombinant E. coli cells to allow expression of the recombinant structural genes such that the epitopic peptide sequences are accessible to antibody recognition; (viii) a peptide population obtained from the process of (vii); (ix) a population of peptides, where each member of the population has a length of 4 to 12 amino acid residues, and where the population contains at least 10% of all possible peptide sequences of that length; (x) a population of binding pairs comprising: a population of peptides, each member of the population having a length of 4 to 12 amino acid residues, where (II), where substantially every member of the peptide population is bound to an antibody; (xi) a matrix comprising the population of binding pairs of (x); (xii) a population of oligonucleotides comprising double-stranded oligonucleotid es that comprise (I), the oligonucleotides comprising 5' and 3' flanking sequences that permit the oligonucleotide to be ligated into a vector; (xiii) a peptide population comprising peptides consisting of random sequences of 4 to 12 amino acid residues; (xiv) a population of binding pairs comprising: a peptide population comprising peptides consisting of random sequences of from 4 to 12 amino acid residues, where substantially every member of the peptide population is bound to an antibody; (xv) a matrix comprising the population of binding pairs of (xvi); (xvii) a method of producing a population of epitopic peptide sequences, comprising: providing a population of recombinant E. coli cells, each of the cells containing at least one member of a recombinant vector population, each member of the vector population comprising autonomously replicating nucleic acid sequences, the nucleic acid sequences comprising a recombinant structural gene, each structural gene containing an insert comprising a member of an oligonucleotide population, the oligonucleotide population comprising oligonucleotides comprising (II); and culturing the recombinant E. coli cells to allow expression of the recombinant structural genes such that the epitopic peptide sequences are accessible to antibody recognition.

USE - The invention may be used for the identification and characterisatio n of peptide epitopes.

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Term	Documents
@AY	16855812
2 AND (@AY < "1986")	1

Display 50 Documents including document number 1

Display Format: REV Change Format

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